

Warm-up

Solve

$$x^2 + 8x + 15 = 4x^2 + 4x - 3$$

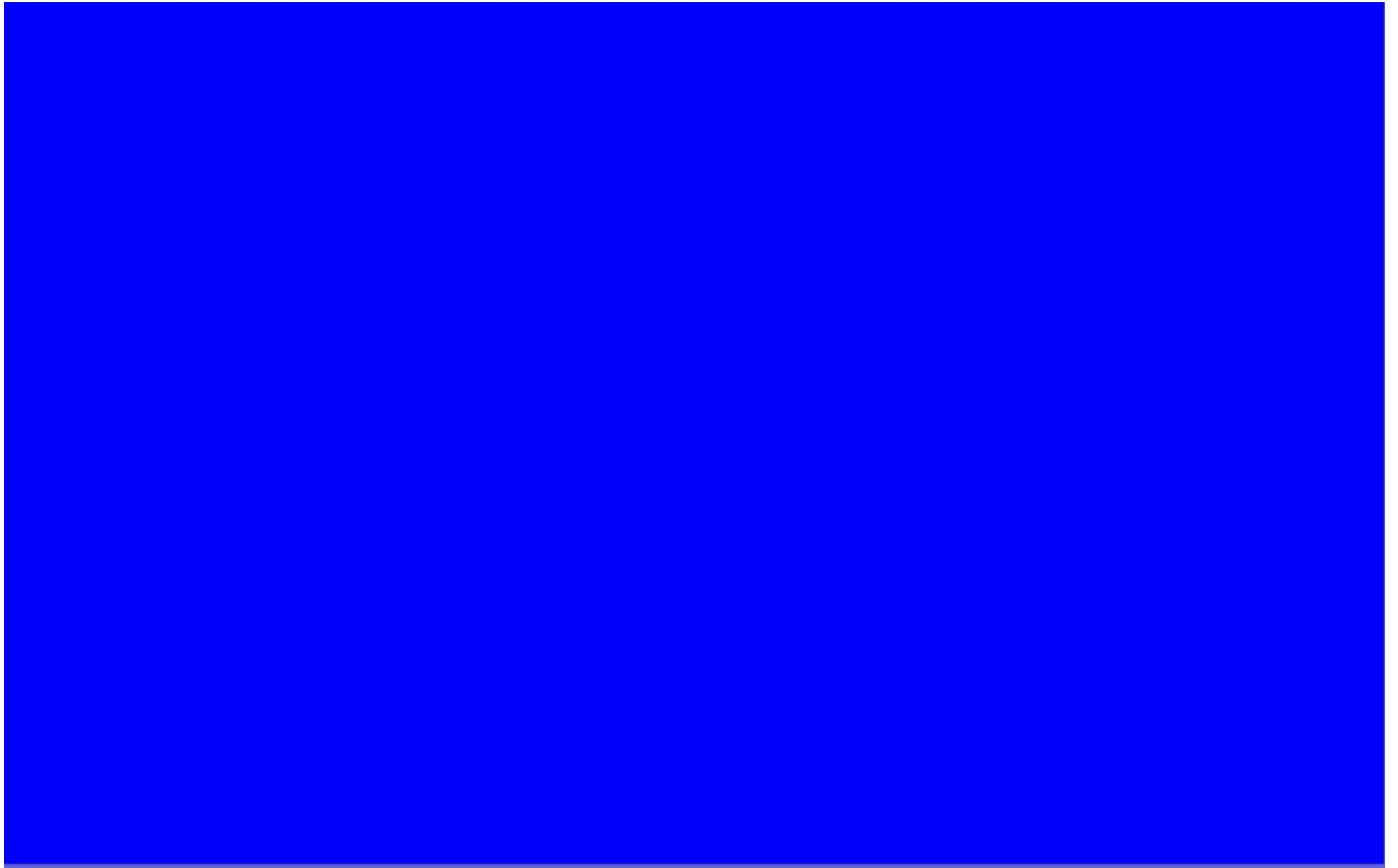
$$3x^2 - 4x - 18 = 0$$

$$x = \frac{4 \pm \sqrt{(-4)^2 - 4(3)(-18)}}{2(3)}$$

$$x = \frac{4 \pm \sqrt{232}}{6}$$

$$x = \frac{4 \pm 2\sqrt{58}}{6}$$

$$x = \frac{2 \pm \sqrt{58}}{3}$$



### 7-3 Logarithm and Exponents



*What is a Logarithm?*

*Why?* 



*Do you hear what I hear?*



### *Logarithm*

*$\text{Log}_b y = x$  is equal to  $y = b^x$*

*"Reads as log base b of y"*

Write  $5^2 = 25$  in log form

$$25 = 5^2$$

$$y = b^x$$

$$\log_b y = x$$

$$\log_5 25 = 2$$

Write  $(1/2)^3 = (1/8)$  in log form

$$\left(\frac{1}{2}\right)^3 = \frac{1}{8}$$

$$y = b^x$$

$$\log_b y = x$$

$$\log_{\frac{1}{2}} \frac{1}{8} = 3$$

$$a) \log_5 5^2 = 2 = \log_5 25$$

$$b) \log_2 2^5 = 5$$

$$c) \log_b b^3 = 3$$

$$d) \log_{10} 100 = 2 = \log_{10} 10^2$$



*Reverse Reverse -- Exponential form this time.*

$$\log_2 64 = 6$$

$$\log_b y = x$$

$$y = b^x$$

$$64 = 2^6$$



Evaluate

$$\log_8 16$$

$$x = \log_8 16 = x$$

$$8^x = 16$$

$$2^{3x} = 2^4$$

$$3x = 4$$

$$x = \frac{4}{3}$$

① change to exp. form.

② Write w/ the same base

③ Drop the base.

④ Solve

$$\log_5 125 = x$$

$$5^x = 125$$

$$5^x = 5^3$$

$$x = 3$$

*Questions*

*HW p 321 (2-12E) + (16-26E) + (30-40E)*